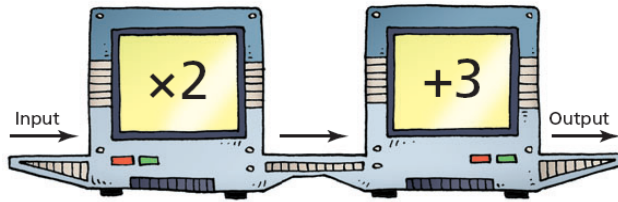


## 3.2 Properties of Functions

### Make Connections



Input	Output
1	5
2	7
	9
4	
	13

What is the rule you see for this Input/Output machine above?

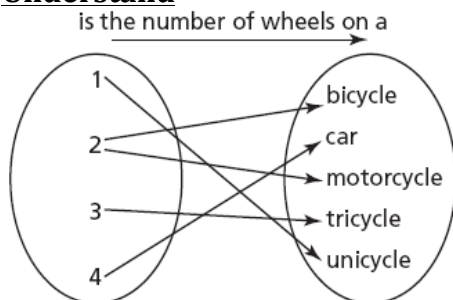
Which numbers would complete this table for the machine?

Definition of a **Function**:

Definition of **Domain**:

Definition of **Range**:

### Understand



This relation associates a number with a vehicle with that number of wheels.

This diagram DOES NOT represent a function because there is one element in the first set that associates with TWO ELEMENTS in the second set.

One specific input value has more than one output value.

**Example 1:** For each relation below,

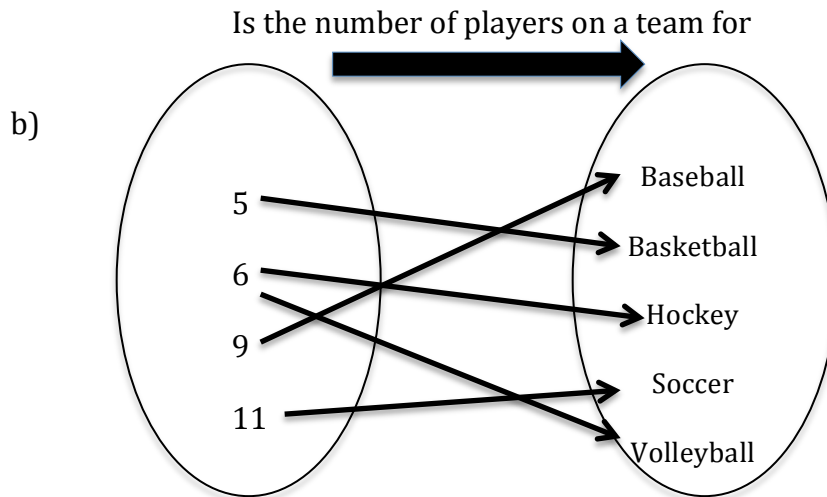
- Identify its domain and range.
- Decide whether the relation is a function.

- a) A relation that associates 5 foods to the food groups to which they belong:  
 $\{(\text{orange}, \text{fruit}), (\text{cheese}, \text{dairy}), (\text{broccoli}, \text{vegetables}), (\text{milk}, \text{dairy}), (\text{kiwi}, \text{fruit})\}$

Domain:

Range:

Function?



Write the relation in words:

Write this relation as ordered pairs.

Domain:

Range:

Function?

The table shows the masses of different numbers of Canadian quarters.

The mass of quarters,  $m$ , depends on the number of quarters,  $n$ .

We say that mass is the \_\_\_\_\_ variable and the number of quarters is the \_\_\_\_\_ variable.

Number of Quarters, $n$	Mass, $m$ (g)
1	4.4
2	8.8
3	13.2
4	17.6
5	22.0

Domain:

Range:

**Try This One:** This table shows sample costs for a pay-as-you-go cell phone plan.

1. Is this relation also a function? Why?

Number of Minutes, $n$	Cost, $C$ (\$)
10	2
20	4
30	6
40	8
50	10

2. Identify the independent and dependent variables.

3. Write the domain and range.

### Function Notation:

Any function that can be written as an equation in two variables can be written in function notation.

- We can write an equation that represents a function using Function Notation.
- For example, to show that  $C=15 + 2n$  represents a function, we write  **$C(n)= 15 + 2n$** ,

We say:

*C depends on n "C of n"*

*C of n is equal to 15 plus 2n*

This shows that C is the dependent variable and that C depends on n.

- n is the domain (input values, x values)
- C(n) is the range (output values, y values)

**Ex:** Find  $C(5)$ :

**Ex:** Find  $C(3)$

**Ex:** Find the value of n when  $C(n)=35$

### Practice 3.2

Pg 270

1, 3, 4, 5, 6, 9, 14, 15, 18